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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/527,034

09/29/2005

Hirofumi Kikkawa

KAWZ 200113

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10/31/2008

FAY SHARPE LLP

1100 SUPERIOR AVENUE, SEVENTH FLOOR  
CLEVELAND, OH 44114

EXAMINER

MILLER, SAMANTHA A

ART UNIT

PAPER NUMBER

3749

MAIL DATE

DELIVERY MODE

10/31/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/527,034	<b>Applicant(s)</b> KIKKAWA ET AL.	
	<b>Examiner</b> SAMANTHA A. MILLER	<b>Art Unit</b> 3749	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 August 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

Receipt of the amendment filed on 8/12/2008 is acknowledged.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over YONEDA (US 4,614,645) in view of MONRO (US 5,044,424) in further view of YAMASHITA (US 4,377,483).

YONEDA teaches:

I. An air preheater (27, heats exhaust smoke from boiler) for heating combustion air by exhaust smoke (2) discharged from a boiler (1), a heat recoverer (33) for heating heat medium by exhaust smoke (5) discharged from the air preheater, a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the heat recoverer (dust collected from the exhaust gas is introduced through line 37) (Fig.2) (col.2 ll.25-29 and col.5 ll.52-53), a wet-type exhaust smoke processing apparatus (6, 8) for wet-type processing exhaust smoke discharged from the dust collector (3) (through line 37) (Fig.2) (col.5 ll.52-53), a reheater (col.4 ll.23-27, the recoverer (33) acts as a reheater (28) and recoverer (33) process of prior art) for heating exhaust smoke (9) discharged from the wet-type exhaust smoke processing apparatus by the heat medium (col.4 ll.33-

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51), and a heat medium circulation pipe passage (9) for circulating the heat medium between the reheater and the heat recoverer (col.4 ll.33-51) (Fig.2), wherein the heat medium circulation pipe passage is provided with temperature control means (col.6 l.28-col.7 l.51, comparative data in which the temperature was measured and controlled) which measures a heavy metal concentration in exhaust smoke discharged from any one or more of the dust collector, the wet-type exhaust smoke processing apparatus and the reheater, and adjust the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration falls within a predetermined range (Tables 1-4) (col.8 ll.54-64).

2. The temperature control means is any one of or more of means for adjusting a heat medium circulation flow rate of the heat medium circulating between the reheater and the heat recoverer, means for cooling the heat medium means for heating the heat medium, and means which disposes a bypass pipe (connecting 33 to 6 to 25 to 27f, Fig.2) for connecting an inlet and an outlet of a passage of the heat medium flowing into the heat recoverer and which adjust a flow rate of the heat medium in the bypass pipe (col.6 l.28-col.7 l.51, comparative data in which the temperature and flow rate was measured and controlled).

3. A boiler (1), a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the air preheater (27), and a wet-type exhaust smoke processing apparatus (6, 8) for wet-type processing exhaust smoke discharged from the dust collector (through line 37) (Fig.2) (col.5 ll.52-53), wherein the system further comprises control means which measures a heavy metal concentration in exhaust smoke

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discharged from the wet-type exhaust smoke processing apparatus (Tables 1-4), and which adjusts any one or more of pH of liquid absorbent of the wet-type exhaust smoke processing apparatus (col.7 ll.12-25), a flow rate of oxidizing-air ( from 16 fed though 23 to 25, col.6 ll.45-48), and a flow rate of waste water, such that the heavy metal concentration falls within a predetermined range (col.8 ll.40-64).

4. An air preheater (27) for heating combustion air by exhaust smoke discharged from a boiler (1), a heat recoverer (33) for heating a heat medium by exhaust smoke discharged from the air preheater, a dust collector (3) for collecting soot and dust in exhaust smoke discharged from the heat recoverer (through line 37) (Fig.2) (col.5 ll.52-53), a wet-type exhaust smoke processing apparatus for wet-type processing exhaust smoke discharged from the dust collector (through line 37) (Fig.2) (col.5 ll.52-53), a reheater (col.4 ll.23-27, the recoverer (33) acts as a reheater (28) and recoverer (33) process of prior art) for heating exhaust smoke discharged from the wet-type exhaust smoke processing apparatus by the heat medium (Fig.2), and a heat medium circulation pipe (9) passage for circulating the heat medium between the reheater and the heat recoverer, wherein the system further comprises control means which measures a heavy metal concentration (Tables 1-4) in exhaust smoke discharged from the dust collector, and adjusts the temperature of exhaust smoke at an outlet of the heat recoverer such that the heavy metal concentration (Tables 1-4 teaches finding concentrations of metals) falls within a predetermined range (col.8 ll.40-64), and which also measures the heavy metal concentration in exhaust smoke discharged from the wet-type exhaust smoke processing apparatus (Tables 1-4), and adjusts any one or

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more of pH of liquid absorbent of the wet-type exhaust smoke processing apparatus (col.7 ll.12-25), a flow rate of oxidizing-air (col.6 ll.45-48), and a flow rate of waste water, such that the heavy metal concentration falls within a predetermined range (col.8 ll.40-64).

5. The temperature control means (maintaining the temperature of the system to a predetermined temperature, col.6 ll.6-10) includes a measuring apparatus (39, of the heat recovery part of the system, col.4 ll.14-32) that measures the heavy metal concentration (which is inherently in the suspended matter, Table 1-4) in exhaust smoke at an inlet (at 33 the gas-gas heat is the other part of the system that the predetermined temperature is kept, col.4 ll.14-32) of a smokestack.

YONEDA teaches the invention as discussed above. However, YONEDA does not teach a preheater that has gas-gas heat exchange with gas going back into the boiler.

Referring to claims 1-5, MONRO teaches a preheater (22) that uses gas (18) going out of the boiler (12) to heat the clean gas (16) that enters boiler (12) (Fig.1) (col.5 ll.10-26).

Therefore, it would have been obvious to a person having ordinary skills in the art at the time the invention was made to have modified the exhaust smoke processing system of YONEDA in view of the teaching of MONRO in order to improve the efficiency of such heat generators and for better utilization of heat produced in the thermal section (MONRO, col.1 ll.22-26).

YONEDA in view of MONRO teaches the invention as discussed above. However, YONEDA in view of MONRO does not teach measuring the mercury concentration or regulating the temperature of the exhaust smoke discharge.

YAMASHITA teaches:

A measuring means which measures a heavy metal mercury concentration in exhaust smoke discharged (col. 15 ll. 5-29, Table 14)., the heat medium which adjust the circulation pipe passage being provided with temperature control means which adjust the temperature of exhaust smoke at an outlet of the heat recoverer such that the mercury concentration falls within a predetermined range (col. 15 ll. 5-29, Table 14).

Therefore, it would have been obvious to a person having ordinary skills in the art at the time the invention was made to have modified the exhaust smoke processing system of YONEDA in view of MONRO in further view of the teaching of YAMASHITA in order to efficiently remove heavy metal contained in an aqueous solution (YAMASHITA, col. 1 ll.50-55).

### ***Response to Arguments***

Applicant's arguments filed 8/12/2008 have been fully considered but they are not persuasive.

Applicant contends that YONEDA does not teach the use of a heat medium circulation pipe passage. However, claims are afforded their broadest reasonable interpretation.

In this instant application, claim 1 merely requires a heat medium circulation pipe passage for circulating the heat medium between the reheater and the heat recoverer.

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In this case, the heat medium circulation pipe (9) contains a heat medium of clean exhaust gas which causes a heat exchange in (33) (col.4 ll.33-51) (Fig.2).

Applicant contends that YONEDA does not teach a preheater. However, claims are afforded their broadest reasonable interpretation.

In this instant application, YONEDA teaches 27, which heats exhaust smoke from boiler. However, YONEDA, as made clear in the above rejection, does not teach a preheater that has gas-gas heat exchange with gas going back into the boiler. MONRO teaches a preheater (22) that uses gas (18) going out of the boiler (12) to heat the clean gas (16) that enters boiler (12) (Fig.1) (col.5 ll.10-26).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, it was made very clear in the rejection that it would have been obvious to a person having ordinary skills in the art at the time the invention was made to have modified the exhaust smoke processing system of YONEDA in view of the teaching of MONRO in order to for improving the efficiency of such heat generators and for better utilization of heat produced in the thermal section (MONRO, col.1 ll.22-26)

.All other arguments are addressed in the rejection above.



***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samantha A. Miller whose telephone number is 571-272-9967. The examiner can normally be reached on Monday - Thursday 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve McAllister can be reached on 571-272-6785. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Samantha Miller/  
Examiner  
Art Unit 3749  
10/26/2008

/Steven B. McAllister/  
Supervisory Patent Examiner, Art Unit 3749